

Application No. 10/564,735 – Amendment filed December 8, 2008

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace prior versions and listings of claims in the application:

The claims have been amended as follows: Underlines indicate insertions and ~~strike through~~ indicate deletions.

**Listing of claims:**

1. (currently amended) A method for recovering at least one platinum group metal (PGM) species from a feed product selected from the group consisting of chromite ore, chromite ore concentrate and PGM concentrate comprising the steps of:
  - a. mixing the feed with at least one salt so as to produce a mixture, whereby the concentration of salt in the mixture is sufficient to convert at least one PGM species into a corresponding PGM chloride salt; and
  - b. contacting the mixture with gaseous chlorine and CO at a temperature between about 240°C and 800°C to induce the conversion of at least one species of PGM into a solid material containing a corresponding PGM chloride salt, whereby said chloride salt of at least one PGM species can be recovered.
2. (currently amended) A The method as recited in ~~of~~ claim 1, wherein said temperature is between about 250°C and about 800°C.
3. (currently amended) A The method as recited in ~~of~~ claim 1, wherein said temperature is between about 350°C and about 800°C.
4. (currently amended) A The method as recited in ~~of~~ claim 1, wherein said temperature is between about 500°C and about 800°C.

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5. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about 500°C and about 720°C.
6. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about 600°C. and about 800°C.
7. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about 620°C and about 800°C.
8. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about 650°C and about 800°C.
9. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about 660°C and about 800°C.
10. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein said temperature is between about ~~500~~660°C and about 720°C.
11. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein the step of contacting the mixture with gaseous chlorine and CO is performed at a gas flow rate of at least 20 ml/min.
12. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein the at least one salt is selected from the group consisting of NaCl, KCl and MgCl<sub>2</sub> and a combination thereof.
13. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein the salt is NaCl.
14. (currently amended) ~~A-The method as recited in of~~ claim 1, wherein the salt is NaCl and forms at least about 5% w/w of the mixture.

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15. (currently amended) ~~A-The method as recited in~~of claim 1, wherein the salt is NaCl and forms about 5% to about 20% w/w of the mixture.

16. (currently amended) A method for simultaneously recovering at least one platinum group metal (PGM) species from a feed chromite product selected from the group consisting of chromite ore and chromite ore concentrate and increasing the Cr/Fe ratio of the chromite product comprising the steps of:

a. mixing the feed with at least one salt so as to produce a mixture, whereby the concentration of salt in the mixture is selected to induce the selective extraction of iron and is sufficient to convert at least one PGM species into a corresponding PGM chloride salt; and

b. contacting the mixture with gaseous chlorine and CO at a temperature of between about 240°C and 750°C so as to 1) induce the formation of a thin film of a melt around the chromite product, 2) promote the selective chlorination of iron and 3) convert at least one PGM species into a solid material containing a corresponding PGM chloride salt and a gaseous phase containing iron chloride,

whereby at least one PGM species chloride salt is recovered and an iron impoverished chromite product is yielded having an increased chromite to iron ratio as compared to that of the chromite product.

17. (currently amended) ~~A-The method as recited in~~of claim 16, wherein the at least one salt is selected from the group consisting of NaCl, KCl and MgCl<sub>2</sub> and a combination thereof.

18. (currently amended) ~~A-The method as recited in~~of claim 17, wherein the at least one salt is in a concentration of about 5% w/w to about 10% w/w in the mixture.

19. (currently amended) ~~A-The method as recited in~~of claim 17, wherein the at least one salt is NaCl in a concentration of about 5% w/w to about 10% w/w in the mixture.

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- 20. (currently amended) ~~A-The method as recited in~~of claim 17, wherein the at least one salt is NaCl in a concentration of about 5% w/w in the mixture.
- 21. (currently amended) ~~A-The method as recited in~~of claim 16, wherein the step of contacting the mixture with gaseous chlorine and CO is performed at a chlorine flow rate of at least about 60 ml/min.
- 22. (currently amended) ~~A-The method as recited in~~of claim 16, wherein the step of contacting the mixture with gaseous chlorine and CO is performed at a chlorine flow rate of at least about 200 ml/min.
- 23. (currently amended) ~~A-The method as recited in~~of claim 16, wherein the temperature is between about 250° and about 720°C.
- 24. (currently amended) ~~A-The method as recited in~~of claim 16, wherein the temperature is between about 670° and about 720°C.
- 25. (currently amended) ~~The~~A method as recited inof claim 1, wherein the Cl<sub>2</sub>/CO ratio is between about 0.5 and about 1.5.
- 26. (currently amended) ~~A-The method as recited in~~of claim 1, wherein the mixture is dried before chlorination.
- 27. (currently amended) ~~A-The method as recited in~~of claim 1, wherein N<sub>2</sub> is used as a carrier gas during chlorination.
- 28. (currently amended) ~~A-The method as recited in~~of claim 1, wherein the duration of the chlorination is about 30 minutes to about 2 hours.
- 29. (currently amended) ~~A-The method as recited in~~of claim 1, wherein the duration of the chlorination is about 2 hours.

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- 30. (currently amended) ~~A-The method as recited in~~ claim 16, wherein the  $\text{Cl}_2/\text{CO}$  ratio is between about 0.5 and about 1.5.
- 31. (currently amended) ~~A-The method as recited in~~ claim 16, wherein the mixture is dried before chlorination.
- 32. (currently amended) ~~A-The method as recited in~~ claim 16, wherein  $\text{N}_2$  is used as a carrier gas during chlorination.
- 33. (currently amended) ~~A-The method as recited in~~ claim 16, wherein the duration of the chlorination is about 30 minutes to about 2 hours.
- 34. (currently amended) ~~A-The method as recited in~~ claim 16, wherein the duration of the chlorination is about 2 hours.